

Notice of Allowability

Application No.

10/728,140

Examiner

Hsien-ming Lee

Applicant(s)

COOLBAUGH ET AL.

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 9/23/04.
2. ☒ The allowed claim(s) is/are 1-6, 13 and 14.
3. ☒ The ^{corrected} drawings filed on 23 September 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

HSIEN-MING LEE
PRIMARY EXAMINER

Hsien-ming Lee
Primary Examiner
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DETAILED ACTION

1. The objection to drawings is withdrawn.

Examiner's Amendment

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Anthony J. Canale (Reg. No. 51,526) on Nov. 16, 2004.

3. The application has been amended as follows:

In claims 2-6, at line 1, insert – **varactor** – before “diode.”

In claim 14, at line 1, insert – **diode** – after “varactor.”

Allowable Subject Matter

4. Claims 1-6 and 13-14 are allowed.
5. The following is an examiner's statement of reasons for allowance:

The closest prior art of record, Vashchenko et al. to US 6,653,716, teaches a related varactor on a semiconductor substrate, comprising:

- a well region 814 and 816 of a first conductivity type (n-type) in the substrate 812 (Fig. 8F);
- a plurality of isolation regions (FOX) on upper portions of the well region 814 and 816;

- a plurality of masking structures 830/838/852 having first and second sides formed on the substrate 812 between respective ones of said plurality of isolation regions (FOX);
- a first plurality of diffusion regions 852/854 of a second conductivity type (p-type), at least some of said plurality of diffusion regions 852/854 abutting respective ones of said plurality of isolation regions (FOX); and
- a second plurality of diffusion regions 860/862 of said first conductivity type (n-type) abutting portions of said first plurality of diffusion regions 852/854 that **abut** respective ones of said plurality of isolation regions (FOX), said second plurality of diffusion regions 860/862 extending below respective sides of respective ones of said plurality of masking structures 840/852, wherein respective ones of said second plurality of diffusion regions 860/862 do not contact one another.

In contrast, Vashchenko et al. neither teach nor suggest that a second plurality of diffusion regions 860/862 of said first conductivity type (n-type) abuts portions of said first plurality of diffusion regions 852/854 that do **not abut** respective ones of said plurality of isolation regions. Instead, the first plurality of diffusion regions 852/854 **do abut** respective ones of said plurality of isolation regions.

Vashchenko et al. also neither teach nor suggest a second plurality of diffusion regions of a first conductivity type extending laterally from portions of a first plurality of diffusion regions not adjacent an isolation regions and having a dopant concentration greater than that of the first plurality of diffusion regions.

Therefore, the instant invention is neither anticipated nor rendered obvious over the prior art of record.

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6. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-ming Lee whose telephone number is 571-272-1863. The examiner can normally be reached on Tuesday-Thursday (8:00 ~ 6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hsien-ming Lee
Primary Examiner
Art Unit 2823

Nov. 16, 2004

HSIEN-MING LEE
PRIMARY EXAMINER

11/16/04